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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,031	11/29/2001	Ricky Amos	YOR920010633US1 (062)	9669

7590 01/22/2003

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EXAMINER

LANDAU, MATTHEW C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 01/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,031

Applicant(s)

AMOS ET AL.

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 17-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, and 6-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Maria et al.

In regards to claim 1, Figure 5 of Maria et al. discloses a MOS device comprising: a semi-conducting substrate 16 having source 12a and drain 14a regions; a gate dielectric layer 20a' of less than 100 angstroms thickness (see page 3, paragraph [0033]) on said semi-conducting substrate 16; and a gate 22 formed of Ru (see page 4, paragraph [0036]) on top of said dielectric layer 20a'. Note that Maria et al. discloses that "any of the gate dielectric layer configurations 20-20'" of FIGS. 1-4 may be used in FIG.5".

In regards to claim 2, Figure 5 of Maria et al. discloses the gate dielectric layer 20a' having a thickness less than 50 angstroms (see page 3, paragraph [0033]).

In regards to claim 3, Figure 5 of Maria et al. discloses the gate dielectric layer 20a' is formed of a mixture of SiO₂ and a metal oxide.

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In regards to claim 4, Figure 5 of Maria et al. discloses the gate dielectric layer 20a' is formed of La_2O_3 .

In regards to claim 6, Figure 5 of Maria et al. discloses the semi-conducting substrate 16 has at least one source 12 and one drain 14.

In regards to claim 7, Figure 5 of Maria et al. discloses the semi-conducting substrate 16 is n-type or p-type. It is inherent to have doped substrate in order to create a channel region below the gate.

In regards to claims 8 and 9, Maria et al. discloses the semi-conducting substrate 16 is formed of silicon (see page 3, paragraph [0033]).

In regards to claim 10, Figure 5 of Maria et al. discloses a FET comprising: a semi-conducting substrate 16 having source 12 and drain 14 regions; a gate dielectric layer 20a' of less than 100 angstroms thickness (see page 3, paragraph [0033]) on said semi-conducting substrate 16; and a gate 22 formed of Ru (see page 4, paragraph [0036]) on top of said dielectric layer 20a'. Note that Maria et al. discloses that "any of the gate dielectric layer configurations 20-20'" of FIGS. 1-4 may be used in FIG. 5".

In regards to claim 11, Figure 5 of Maria et al. discloses the gate dielectric layer 20a' having a thickness less than 50 angstroms (see page 3, paragraph [0033]).

In regards to claim 12, Figure 5 of Maria et al. discloses the gate dielectric layer 20a' is formed of a mixture of SiO_2 and a metal oxide.

In regards to claim 13, Figure 4 of Maria et al. discloses the gate dielectric layer 20a' is formed of La_2O_3 .

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In regards to claim 14, Figure 5 of Maria et al. discloses the semi-conducting substrate 16 is n-type or p-type. It is inherent to have doped substrate in order to create a channel region below the gate.

In regards to claim 15, Maria et al. discloses the semi-conducting substrate 16 is formed of silicon (see page 3, paragraph [0033]).

3. Claims 1, 5, 10, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Inumiya et al. (US Pat 6,403,997, hereinafter Inumiya).

In regards to claim 1, Figure 5B of Inumiya discloses a MOS device comprising: a semiconducting substrate 11 having source and drain regions 17; a gate dielectric layer 19 of 5nm thickness (column 10, line 64) on said substrate; and a gate 20 formed of Ru on top of the gate dielectric (column 10, lines 65-67).

In regards to claim 5, Inumiya discloses the dielectric layer 19 is formed of SiO₂ (column 10, line 63).

In regards to claim 10, Figure 5B of Inumiya discloses a FET comprising: a semiconducting substrate 11 having source and drain regions 17; a gate dielectric layer 19 of 5nm thickness (column 10, line 64) on said substrate; and a gate 20 formed of Ru on top of the gate dielectric (column 10, lines 65-67).

In regards to claim 16, Figure 5B of Inumiya discloses the semiconductor substrate 11 is formed of silicon and the gate dielectric layer 19 is SiO₂ (column 10, lines 55-65).

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Response to Arguments

4. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached on 8:00 AM-4: 30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Matthew C. Landau

Examiner

January 17, 2003